

NOTES ON THE REPRODUCTION OF THE NORTHERN LONGNECKED TORTOISE

(*CHELODINA RUGOSA*)

by John Cann

To the author's knowledge there is no published record of the reproductive habits of the Northern Longnecked Tortoise *Chelodina rugosa*.

In 1974, Graham Webb collected a gravid specimen at the Liverpool River, Northern Territory. An egg from this tortoise reached the Australian Museum, Sydney, and it was placed in an incubator on the 2nd October, 1974. Temperature was maintained between 27 and 30 degrees C, and the hatchling emerged on March 23rd, 1975, 172 days later. The period September-November is favoured by most Australian tortoises for egg-laying. But there are exceptions. One such exception is the Broad-Shelled Tortoise *Chelodina expansa*. Goode and Russell (Australian Journal of Zoology, 1968, 16/749-61) observed that Broad-Shelled Tortoises in the Murray River, New South Wales normally deposited their eggs during the months March-May. The natural period of incubation of this species is 324-360 days at a mean temperature of 16.1 degrees C. Eggs artificially incubated at 30 degrees C hatched 130-140 days after laying. One reason for the long incubation period is the dormancy of the embryo during the cold months of winter immediately following the laying. Another factor which will lengthen the hatching period is the capping plug which seals the entrance to the nest. This is made of clay or mud mixed with cloacal fluid released by the female after laying. It forms a rock-like plug; an attempt to keep predators from the eggs. But it also prevents the young from reaching the surface until rain softens the earth. In one instance, Russell

opened a nest on the Murray River to find live young, 665 days after laying.

The author applied for a permit from the Northern Territory Wildlife Commission to receive a female Northern Longnecked Tortoise. On the night of 10th March, 1978, at 8.00 p.m., Steve Swanson collected a female Northern Longnecked Tortoise approximately 50 kilometres south-east of Darwin, Northern Territory. It was "travelling purposefully along the top of the earthen wall of a dam". The immediate proximity of a substantial body of shallow water supporting prolific plant growth provided an ideal habitat for this species. Swanson did intend to watch the laying if it had been attempted, however his presence was noticed, causing the tortoise to attempt to escape.

The tortoise was passed to Darwin Museum and consequently sent to the author in Sydney. It proved to be gravid. This condition can be determined in a number of ways. One method is to place the thumb and index finger into the cavity in front of the rear legs. It is often possible to detect the eggs in this manner. When the eggs are few in number the female may draw them higher into the body cavity, and it may be necessary to give a few vigorous shakes to bring the eggs into a suitable position for detection. Another method is to relax the tortoise in water while endeavouring to detect the form of the eggs in the previous manner. This is often necessary with the Common Longnecked Tortoise *Chelodina longicollis* and the New Guinea Longnecked Tortoise *Chelodina novae-guinea*. Their anatomy is such that their legs can be completely retracted, leaving no room for probing.

Placing the tortoise in an enclosure with facilities to lay the eggs is not necessarily the answer, as it is likely to drop the eggs into the water, in which case the embryo will drown. More likely it will retain the eggs for a long period. Tortoises have been known to retain eggs for five years, 2 months (Cann, "Tortoises of Australia"). For this reason the tortoise was injected with "Pictin" into the rear leg muscle. Shortly after she released seven elongated eggs. Other eggs could be felt, but a larger dose of "Pictin" could not induce further laying. Eventual dissection produced a further seven eggs. The eggs averaged 35mm x 26 mm. The oviducts carried numerous unshelled eggs, some as large as 14 mm in diameter, indicating another laying could have been due soon. It would appear that tortoises are able to control the advancement of undeveloped eggs until they consider conditions ideal for laying.

The eggs were placed in an incubator heated with the aid of a light bulb. Six of the eggs proved infertile. Seven died containing fully formed young, due to collapsing of

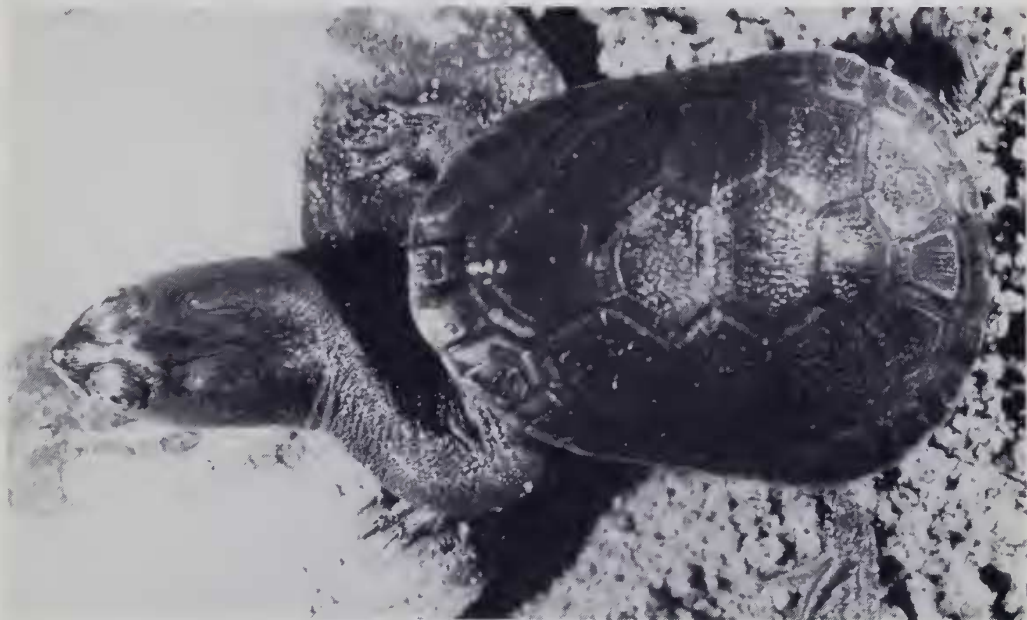
the internal cavity, causing the dividing membrane to press the tortoises into a cramped position. Some of these eggs were opened and the division cut away, but the tortoises died within 24 hours. The sole surviving egg hatched after 206 days. The hatchling measured 32 mm x 24 mm.

With Webb's specimen laying in September, and Swanson's in March, it becomes apparent that the Northern Long-necked Tortoise has an unusual laying cycle.

The length of the incubation periods of both specimens indicates that under natural conditions the Northern Long-necked Tortoise could take almost 12 months to emerge from the nest.

Swanson's tortoise, and hatchlings, were placed in the Northern Territory Museum. Measurements of the tortoise are as follows:

Carapace - 289 mm x 192 mm
Plastron - 242 mm x 113 mm
Depth - 117 mm



Hatchling Northern Long-necked Tortoise
Chelodina rugosa - Photo John Cann